News

- Final US ATLAS HL-LHC Director's Review Report Available
  - posted off of the agenda (will be inserted into docDB)
- US CMS HL-LHC Director's Review at Fermilab: Feb. 2 – 4
  - ATLAS members of review committee: J. Nielsen, J. Proudfoot, H. Evans
    - J. Cochran and M. Tuts also present as observers
  - Flowdown was (again) the main theme
  - Main CMS differences from ATLAS
    - did not meet the DOE and NSF budget guidances: will fix for CDR
    - budgets not done at the institute level (generic labor assumptions)
    - BoEs much less detailed than ATLAS: will fix for CDR
    - had a very minimal discussion of Scope Contingency
    - use MC-based risk analysis (but only considers global risks)
    - the committee commented on all of these issues
  - We are working with CMS to ensure a more uniform level of detail with ATLAS

Proposed Steps to CDR

Wed, 27-Jan	DR de-briefing in L2 Managers Meeting
Fri, 29-Jan	Updated PEP draft, Ch's 1-4, 6
Mon, 01-Feb	Distribute PEP draft to external readers
Mon, 08-Feb	Decide on Structure of CDR Sessions/Talks
Wed, 10-Feb	Draft "What if" scenarios & Revised Scope Contingency
Tue, 16-Feb	Budgets and Schedules Frozen (NSF & DOE)
Wed, 17-Feb	Draft Review Web page
Fri, 19-Feb	Final Costbooks, Timeline Charts, and BoEs • NSF Cost Estimate Methods in BoEs • L2 Summary table & chart • L2 sub-system tables & charts
Mon, 22-Feb	Installation & Commissioning Cost/Effort Estimate
Mon, 22-Feb	New Effort estimates
Mon-Fri, 15-19-Feb	Practice Talks: go over outlines
Tue, 23 Feb	Post Final PEP and other documents
Fri, 26-Feb	Post Talk Drafts
Mon-Fri 29-Feb – 4-Mar	Final Practice Talks
Tue-Thu, 08-10-Mar	Review

NEW

CDR Structure

NSF CONCEPTUAL DESIGN REVIEW AGENDA

	07:30 AM	8:00 – 8:30	8:30 – Noon	Noon – 1:00	1:00 – 4:00 pm	4:00 – 4:30 pm
Tue (3/8)	bldg opens	exec session	Plenary	lunch	LAr – Management Muon – Technical	exec session
Wed (3/9)	bldg opens	exec session	Tile – Management Trigger – Technical	exec lunch	Muon – Management LAr – Technical	exec session
Thu (3/10)	bldg opens	exec session	Trigger – Management Tile – Technical	lunch + homework	exec session	closeout

- Plenary Session
  - Intro & Management Overview
  - Flowdown
  - Technical Overview
- Technical Breakout Sessions
  - L2 Manager Overview
  - Short Sub-System Expert Technical Talks
- Management Breakout Sessions
  - L2 Manager Overview
  - BoE Drilldowns led by Sub-System Experts

Practice Talks
- 15-19 Feb: outlines
- 26-Feb: post draft talks
- 29-Feb – 4-Mar: final practices

L2 Technical Overview Talks

- Intro: L2 WBS, L2 Name, Institutions, experience of L2 manager
- Physics Requirements
  - same slide for everyone – PEP Physics Sensitivity Table
- Flow down to performance and technical requirements
- Scope of the International ATLAS Upgrade for your sub-system
  - include (approximate) US fractional contributions in each element of ATLAS scope
  - Point to scoping document relevant chapter for more details
- Scope of the proposed NSF supported deliverables:
  - Introduce WBS and major deliverables on one slide
    - with U.S. institutes and U.S. fraction.
  - Walk through each deliverable with some details on the NSF scope
    - Organization of each Deliverable -- Institutes and tasks under deliverable
    - leave the detailed description of tasks to L3 managers)
- Identify Sub-System Integration Engineer and his/her role
- Identify major milestones, challenges and risks
- Identify ongoing R&D efforts

Expert Technical Overview Talks

- Intro: Expert Name/Institute, Deliverable(s) WBS, Experience
- Technical Description and of each item under the deliverable
  - describe its functionality in some detail
  - Describe why it was chosen and how does it address the upgrade needs.
- What are the major challenges remaining and the ongoing R&D effort to address these challenges
- Which Institutes and why is the US (NSF) best positioned to take on this role.

L2 Management Talks

- Intro, Physics Req, Flowdown, International Scope, NSF Scope
  - same slides as in Technical Talk
- Organization: Describe the international and U.S. organization
  - how they are connected, level of communication
- Describe the process of defining the scope of US deliverables.
  - what has been done thus far -- point to Cost books, BoEs, and other documents.
- Costing: Describe the evaluation methodology in general terms
  - how the costing was done for M&S, Labor and Travel. Use the GAO table language.
  - Cost tables from Cost Books
- Schedule: Describe the schedule associated with each deliverable
  - new L2 charts with float will be provided
- External Dependencies: 1 slide with a summary of the main dependencies
  - mention ATLAS-wide strategy for “defaults”
- Risks: Identify the principal risks associated with the deliverables and mitigation strategies.
  - What-If Scenarios: mention a few (need input from NSF on what they want here)
- Budget Contingency: State the top-down contingency and why this number was set
  - based on Phase I rules – will be distributed
- Scope Contingency: describe the process
  - give a list of potential scope contingency items in your system, with cost savings, decision points, and impact/mitigation strategy
- Scope Opportunity: Describe what is not within the baseline but where the U.S (NSF) can play a significant role
- List of possible BoEs to go over

Cost Estimation in BoEs

- Refer to GAO Costing Methods in BoEs
  - template "Estimate Type" box attached to agenda
  - L2 managers should replace the existing box with this (by Feb. 19)
- Mapping GAO Cost Estimation Methods Old (DOE-based) BoEs

GAO Method	DOE Method
Analogy	Engineering Estimate based on Similar Items (what were the Similar Items)
Data Collection	not used
Engineering Build-Up	Engineering Estimate base on Analysis (what elements went into the Analysis)
Expert Opinion	Expert Opinion
Extrapolate from Actuals	Documented Vendor Estimate (need to include quotes)
Parametric	not used
Software Estimate	not used

See Charge Appendix for more details

New Effort

- Request to quantify “new effort” needed for HL-LHC
- We choose to interpret this to mean
  - technical effort that is not already present at an institute
  - Examples
    - an engineer that you post an ad to hire would be new effort
    - an engineer who transitions from M&O work would not be new effort
    - an engineer at your institute who moves from NOvA work to ATLAS HL-LHC would not be new effort
    - student effort is never new effort (student's are an available resource)
  - checking with NSF that this is the correct interpretation
- Contact institutes in your system for estimates of new effort
  - ask them to send you the number of people from the HL-LHC personnel that they requested who would qualify as new effort
  - gather this information by Feb. 22

Installation & Commissioning

- We have made a rough estimate of I&C needs for NSF scope
  - based on Phase-I and Phase-0 experience
    - spreadsheet attached to the agenda for your information
  - the total is about $5.6M over 4 years (FY23-26)
- We do not plan to present this number at the CDR
  - we will say that it is similar to the current R&D needs
  - so we can cover I&C by devoting Ops funds previously assigned to R&D to it once R&D is finished

Scope Contingency & What-If's

- Scope Contingency
  - update list of Scope Contingency items
    - item, decision timing, impact, mitigation
  - timing: look for items that can be dropped late in the game
  - mitigation: how the strategy affects ATLAS overall
- "What-If" Scenarios from CDR charge
  - "Describe 'what if' scenarios that have been examined by the project planners and comment on the sensitivity of the TPC to this analysis and its influence on the TPC cost range?"
  - Aim for a few "what-if's" per L2 system (think like a reviewer)
    - describe: scenario, probability, impact, mitigation strategy
    - very similar to risk analysis in BoE, but more of a "story" (?)
- Attach these to the agenda
  - modification key: 2025